fear will not be found acceptable by a great many botanists. I shall not criticise it in detail, but I may be allowed to state that the most eminent teachers of botany insist on having their laboratories conform to the following principles:

1. The laboratory should not be used as a lecture-room. Only occasional help by drawing on a blackboard should be given to the students, whereas systematic teaching is to be done in a room specially fitted for the purpose.

2. Models, dried specimens and specimens in spirit should be kept in a separate room, from which they can easily be taken into the lecture-room.

3. Only a few important text-books should be admitted to the laboratory. All other books and periodicals may be consulted in the library.

4. Chemical work should not be done on the same tables on which microscopical work is carried on. Whenever fumes dangerous to microscopes are given off in a chemical process a good hood is necessary.

In order to meet all these requirements I submit another plan. I have not indicated any windows, but have not left them out of account in my calculations. In the laboratory they ought to be as large and numerous as possible, but the exact position of them here and in all other rooms ought to be arranged with an architect, though not entirely left to him. At *R*, *S*, *T*, *U*, spaces are left for cases to hold material for cutting, bottles, mortars, funnels, etc. In the middle of the laboratory an iron column is to support the ceiling. The doors are indicated on the drawing, which will make the general arrangement of a laboratory as I should like to have it much clearer than I could make it by words. I refrain from going into details, as I shall have an opportunity of doing so in a future paper for the GAZETTE on the Oxford laboratory To prevent misunderstanding, however, I have to add that the plan of the Oxford laboratory is entirely different from the one I have designed.—SELMAR SCHÖNLAND, *Botanic Garden, Oxford.*

Effect of the wind on bees and flowers.—It must be a matter of common observation that the wind has an influence on the flight of insects and birds. While in continued flight they seem to have little difficulty in moving with the wind, in rising and lighting they use their wings with more precision when their faces are turned against it.[1] Thus, if a bee comes with the wind, it turns when it visits a plant and lights on the leeward side. If it is visiting flowers regularly, it moves against the wind, since it can rise and light more easily by so doing.

A simple effect of the wind on flowers is that it carries the odors so that they are most readily perceived on the side toward which it blows.

[1] In Florida I saw many buzzards and vultures lighting with their faces to the wind. When disturbed, they rose against the wind and swung around and lighted with their faces toward it. If one passed a few feet beyond where he wished to light, he would make a circle of 200 yards rather than turn with his back to the wind.

Then the wind catches in the leaves and flowers and bends the stems and branches, so that the flowers are most conspicuous on the same side. I have seen the heads of Helianthus grosse-serratus turned to the northeast by a southwest wind, and the bees were flying southwest, and thus approached the heads in front. But the flower-stalks often whip about, making it hard for an insect to light. It must be tantalizing to a bee for the head to fly up and leave her suspended in mid-air.

In Physostegia the flowers are nearly sessile, so that they are not easily shaken by the wind, and when turned to any position remain in it. Prof. W. W. Bailey says:[2] "The flowers are made to assume their definite position by friction of the pedicels against the subtending bracts. Remove the bracts and they at once fall limp. This was shown me by Prof. Goodale in 1879." With the breath one can easily blow the flowers to the opposite side of the spike.

Prof. Coulter[3] has observed how the movement of the flowers is useful in bad weather by turning their mouths from a driving rain, but I think it is also advantageous in fair weather in adaptation to the flight of insects.

In September, 1886, I found several hundred stalks of Physostegia Virginiana arranged in a long patch along the railroad. The southwest wind was blowing up the road, and the flowers were all turned away from the wind, so that they looked to the northeast. As I walked through the patch from the southwest, I passed nineteen humble-bees, Bombus Pennsylvanicus[4] (females and workers), all going against the wind, except two, which did not visit the flowers regularly but flew away to the northeast. Returning, I overtook the bees going against the wind, but passed none going with it. Keeping their faces to the wind, they would move from side to side, or even let themselves back to a spike they were about to leave behind. It was interesting to observe that, while the wind required the bees to face it, it compensated for the disadvantage by carrying the odors to them and by turning the flowers so that they were more easily seen and visited by them.—CHARLES ROBERTSON, *Carlinville, Ill.*

Conditions of Assimilation.[5]—In this paper Dr. Pringsheim notes the limitations of the prevalent method of gas analysis, and has striven by direct observation of the protoplasm to determine the seat and relations of the various functions. It seemed likely that the observation of protoplasmic movements in varying conditions of light and darkness, and in partial or total removal of oxygen, would afford a suitable starting

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[2] BOT. GAZ. vii, 122.

[3] BOT. GAZETTE, vii, 111.

[4] The flowers are also visited by Apathus elatus (frequent) and Colias Philodice (once).

[5] Dr N. Pringsheim has communicated to the Prussian Academy of Sciences a preliminary account of his researches on the dependence of assimilation in green cells on the presence of oxygen and on the locality where the oxygen formed in assimilation actually originates. These researches are so important that we present the following abstract by Prof. A. W. Bennett, from the *Jour. Roy. Mic. Soc., Dec.*, 1887, p. 992.—[EDS.